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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

DRENNAN, BARRY T

ART UNIT	PAPER NUMBER
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2624

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/579,087	LEE ET AL.	
	Examiner	Art Unit	
	Barry Drennan	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/3/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment received on 4 February 2009 has been entered. Claims 1-5 are pending in the application.

Requirement for Information

2. Applicant is held in compliance with the Requirement for Information under 37 CFR 1.105 made in the preceding Office action, with Examiner's thanks.

Response to Arguments

3. In response to the objection to the specification concerning the title, Applicant has amended the title to be satisfactory. Accordingly, the objection to the specification on this basis is withdrawn.
4. Amendments were made to clarify various formulas throughout the specification due to issues with typesetting in the prior submitted specification. Accordingly, the objection to the specification on this basis is withdrawn.
5. Amendments were made to clarify formulas present in claims 2 and 3 due to issues with typesetting in the prior submitted claims. Accordingly, the objections to claims 2 and 3 on this basis are withdrawn.

6. Applicant has argued without amendment that claims 1-3 are in compliance with 35 U.S.C. 101, on the basis that they recite a limitation that "produces a useful, concrete, and tangible result". Examiner respectfully disagrees, and cites *In re Bilski*, 545 F.3d 943, 88 U.S.P.Q.2d 1385 (Fed. Cir. 2008), which holds that the "machine or transformation" test should be applied to method/process claims to determine their eligibility under 35 U.S.C. 101. A more detailed description of this rejection is provided below. Accordingly, the rejections of claims 1-3 under 35 U.S.C. 101 are maintained.

7. Applicant has argued that claim 4, as amended, is in compliance with 35 U.S.C. 101. However, Applicant's specification indicates that *transmission media* such as optical or metallic lines, wave guides, etc., which propagate signals, are considered computer readable media, and this has not been expressly disclaimed by Applicant. Examiner therefore continues to construe the claim as including transmission media as being encompassed by the term "computer readable medium", and cites *In re Nuijten*, 84 USPQ 2d 1495 (Fed. Cir. 2007), which holds that "[a] transitory, propagating signal... is not a process, machine, manufacture, or composition of matter." Accordingly, the rejection of claim 4 under 35 U.S.C. 101 is maintained.

8. Applicant has argued without amendment that claim 5 is in compliance with 35 U.S.C. 101, on the basis that the claim recites a limitation that "physically transforms or reduces an article to a different state or thing". Examiner respectfully disagrees, and

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cites *In re Warmerdam*, 3 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), which holds that functional descriptive material claimed *per se* is not patent eligible under 35 U.S.C. 101. Examiner notes that every element of claim 5 is a "unit" or "filter" which is implementable completely as software (and Applicant's specification concurs with this observation at page 16). Software is considered functional descriptive material, and therefore, claim 5 is directed to functional descriptive material *per se*. Accordingly, the rejection of claim 5 under 35 U.S.C. 101 is maintained.

9. Applicant argues that claim 1, as amended, is patentable over over Sohn et al., "Impulsive noise filtering based on noise detection in corrupted digital color images," Circuits, Systems, and Signal Processing, Vol. 20 No. 6, pp. 643- 654 (published November 2001, hereinafter **Sohn**) in view of Fang et al., U.S. Patent 5,771,318 (issued 23 June 1998, hereinafter **Fang**).

Applicant argues that the addition of the word "and" in claim 1 clarifies the claim. However, Examiner respectfully disagrees; in fact, it appears that the scope of the claim has not changed by way of this amendment.

Applicant also argues that there would have been no motivation at the time the invention was made for an ordinary artisan to combine the Sohn and Fang references. Examiner respectfully disagrees; the motivation to combine is reiterated in the restatement of the pending rejections below.

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The various other arguments raised by Applicant concerning claim 1 appear to be directed toward features asserted to be present in Applicant's invention, but that are not recited in the claims.

Accordingly, the rejection of claim 1 under 35 U.S.C. 103(a) over the prior art of Sohn in view of Fang is maintained.

10. Applicant argues that claims 2 and 3 are patentable in accordance with claim 1 due to their dependency upon claim 1. This argument is moot in view of the discussion concerning claim 1 above. However, Examiner notes that claim 3 was not rejected under 35 U.S.C. 103(a) in the prior Office action. Accordingly, the rejection of claim 2 under 35 U.S.C. 103(a) over the prior art of Sohn in view of Fang is maintained.

11. Applicant argues¹ that claims 4 and 5 are patentable in accordance with claim 1 because they contain substantially the same limitations of claim 1. This argument is moot in view of the discussion concerning claim 1 above. Accordingly, the rejection of claims 4 and 5 under 35 U.S.C. 103(a) over the prior art of Sohn in view of Fang is maintained.

12. Following are the objections and rejections pending in the present application.

¹ Examiner assumes this to be Applicant's intention, although the arguments as written appear to state that claim 4 is independent and claim 5 is dependent upon claim 4; as presented in Applicant's amendment, claim 4 is dependent upon claim 1, and claim 5 is independent.

Claim Rejections - 35 USC § 101

13. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

14. Claims 1-3 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. The Federal Circuit², relying upon Supreme Court precedent³, has indicated that a statutory “process” under 35 U.S.C. 101 must (1) be tied to a particular machine or apparatus, or (2) transform a particular article to a different state or thing. This is referred to as the “machine or transformation test”, whereby the recitation of a particular machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility (See *Benson*, 409 U.S. at 71-72), and the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity (See *Flook*, 437 U.S. at 590”). While the instant claims recite a series of steps or acts to be performed, the claim(s) neither transform an article nor positively tie to a particular machine that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

That is, the claims are not tied to a machine, because none of the steps of the claims indicate or require the use of a particular machine in a manner that imposes meaningful limits on the claim's scope and that involves more than insignificant extra-

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

³ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

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solution activity. Additionally, there is no eligible transformation being performed, even though data is modified by performing the steps recited in the claim, because the unmodified data is not claimed to represent a physical object or substance, and there is no element claimed involving a depiction of the modified data as an external representation of the physical object or substance, where the depiction must impose meaningful limits on the claim's scope and not merely be insignificant extra-solution activity.

15. Claim 4 is rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. The claim encompasses computer readable media that include "transmission medi[a] such as optical or metallic lines, wave guides, etc. including a carrier wave transmitting signals specifying the program instructions..." (Applicant's disclosure, page 15 line 31 through page 16 line 2). The inclusion of transmission media as being a "computer readable medium" thus causes the claim to encompass signals *per se*. "A transitory, propagating signal... is not a process, machine, manufacture, or composition of matter" (*In re Nuijten*, 84 USPQ 2d 1495 (Fed. Cir. 2007)).

Examiner suggests that striking from the disclosure all inclusions of transmission media, signals, etc., as examples of computer readable media would permit a more limited construction that would only encompass physical computer readable media on which the computer program is tangibly embodied.

16. Claim 5 is rejected under 35 U.S.C. 101 because the claim is directed to non-statutory subject matter. Claim 5 defines a system. However, the body of the claim lacks definite structure indicative of a physical system. Furthermore, the specification indicates that the invention may be embodied as pure software (Applicant's disclosure page 15 line 31 through page 16 line 7, and page 16 line 32 through page 17 line 1). Therefore, the claim as a whole appears to be nothing more than a system of software elements. Software is considered functional descriptive material, and functional descriptive material *per se* does not fall within a statutory category (*In re Warmerdam*, 3 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994)).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sohn, K., et al. ("Impulsive noise filtering based on noise detection in corrupted digital color images," *Circuits, Systems, and Signal Processing*, Vol. 20 No. 6, pp. 643-654, published November 2001, hereinafter Sohn) and further in view of Fang et al., U.S. Patent 5,771,318 (issued 23 June 1998, hereinafter Fang).

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19. With respect to claim 1, Sohn discloses dividing the image into predetermined unit areas (Eq. 1), calculating a threshold using values of pixels in the unit area (Eq. 4), detecting whether impulsive noise exists in the unit area via the threshold (Eq. 4), and applying a median filter to the pixel (section 2.1, last paragraph). Sohn does not disclose applying a mean-variance filter to pixels next to the pixel where the median filter is applied.

However, Fang discloses the use of a mean-variance filter (col. 3 lines 19-30), and one of ordinary skill in the art would understand that additional noise in the region of a pixel containing impulsive noise would need to be removed by applying a filter to the surrounding pixels.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the technique of Sohn with the technique of Fang, motivated by the need to remove noise from an image while preserving edge regions in the image (Fang, col. 3 lines 1-6).

20. With respect to claim 2, Sohn further discloses calculating the noise detection threshold through the equation $I_{th} = \alpha + \log_2(x_m)$, with α being a minimum noise threshold and x_m being the mean value of pixels in the unit area (Eq. 4).

21. Claims 4 and 5 are rejected for the same reasons set forth for the corresponding method in claim 1.

Allowable Subject Matter

22. Claim 3 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 101 set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

23. All rejections made in this Office action were maintained from the prior Office action. Accordingly, **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry Drennan whose telephone number is 571-270-7262. The examiner can normally be reached on Monday through Thursday, 9am to 5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Barry Drennan/
Examiner, Art Unit 2624

/Vikkram Bali/

Supervisory Patent Examiner, Art Unit 2624